

IN THE CLAIMS

This listing of claims replaces all prior listings.

1. (Currently Amended) A metal-oxide-compound semiconductor field effect transistor structure comprising:

- a nitride compound semiconductor wafer structure having an upper surface;
- a gate insulator structure comprising a first layer and a second layer;
- wherein said first layer substantially ~~comprising~~ comprises oxygen and at least one of gallium and indium, said first layer in contact with said upper surface; and
- wherein said second layer ~~comprising~~ comprises at least one insulating compound of ~~gallium and oxygen and at least one rare earth element~~;
- ~~— a gate electrode positioned on said gate insulator structure;~~
- ~~— source and drain regions self-aligned to said gate electrode; and~~
- ~~— source and drain ohmic contacts positioned on said source and drain areas;~~
- ~~— wherein gate electrode comprises a metal selected from the group refractory gate metals and combinations thereof;~~
- ~~— wherein the complete nitride MOS structure is built upon a sapphire, silicon, SOI, AlN, or GaN substrate.~~

2-70. (Canceled).

71. (New) The structure of claim 1 wherein said at least one insulating compound comprises at least one indium and gallium.

72. (New) The structure of claim 71 wherein said at least one insulating compound comprises at least one rare earth element.

73. (New) The structure of claim 1 wherein said at least one insulating compound comprises at least one of oxygen and sulfur.

74. (New) The structure of claim 1 wherein said at least one insulating compound comprises at least one rare earth element.

75. (New) The structure of claim 1 further comprising a gate electrode positioned on said gate insulator structure.

76. (New) The structure of claim 72 further comprising source and drain regions self-aligned to said gate electrode.

77. (New) The structure of claim 72 wherein said gate electrode comprises a metal selected from the group refractory gate metals and combinations thereof.

78. (New) The structure of claim 1 further comprising a substrate.

79. (New) The structure of claim 78 wherein said nitride compound semiconductor wafer structure is built on said substrate.

80. (New) The structure of claim 78 wherein said substrate is form from a member selected from the group consisting of sapphire, silicon, silicon on insulator, aluminum nitride, and gallium nitride.

81. (New) The structure of claim 1 further comprising a layer between said first layer and said second layer having a composition intermediate between the compositions of said first layer and said second layer.

82. (New) The structure of claim 1 wherein said first layer has a thickness of more than 3 angstroms and less than 25 angstroms.

83. (New) The structure of claim 1 wherein said gate insulator structure has a thickness of 10-300 angstroms.

84. (New) The structure of claim 1 wherein said upper surface comprises GaN.

85. (New) The structure of claim 1 wherein said upper surface comprises $\text{In}_x\text{Ga}_{1-x}\text{N}$.

86. (New) The structure of claim 1 wherein said upper surface comprises $\text{Al}_x\text{Ga}_{1-x}\text{N}$.

87. (New) An field effect transistor comprising the structure of claim 1.

88. (New) An integrated circuit comprising the structure of claim 1.

89. (New) A method of making a metal-oxide-compound semiconductor field effect transistor structure comprising:

providing a nitride compound semiconductor wafer structure having an upper surface;

providing a gate insulator structure comprising a first layer and a second layer;

wherein said first layer substantially comprises oxygen and at least one of gallium and indium, said first layer in contact with said upper surface; and

wherein said second layer comprises at least one insulating compound.

90. (New) A method of making a metal-oxide-compound semiconductor field effect transistor structure comprising:

providing a nitride compound semiconductor wafer structure having an upper surface;

depositing a gate insulator structure comprising depositing a first layer and depositing a second layer;

wherein said depositing said first layer comprises depositing oxygen and at least one of gallium and indium, onto said upper surface; and

wherein depositing said second layer comprises depositing at least one insulating compound onto said first layer.

91. (New) A method of using a metal-oxide-compound semiconductor field effect transistor structure, said structure comprising:

a nitride compound semiconductor wafer structure having an upper surface;

a gate insulator structure comprising a first layer and a second layer;

wherein said first layer substantially comprises oxygen and at least one of gallium and indium, said first layer in contact with said upper surface;

wherein said second layer comprises at least one insulating compound; and

said method comprising applying a voltage to said gate insulator structure.